Practice: 657 - Wetland Restoration

Scenario: #1 - Mineral Flat,Tile Drain Removal

Scenario Description:

A Mineral Flat wetland is to be restored by tile drain removal. The tract size is 160 Acres consists of surface saturated soils interspersed with shallow depressions that are not depressional class HGM wetlands. The wetland size is also 160 acres. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate strucuture and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation:

The site has been drained with a tile drain system. A suitable seed bank exists for natural regeneration to re-establish hydrophytic vegetation. The site is in agricultural production.

After Situation:

The drain tiles have been rendered non-functional by excavating 50 foot lengths of tile mains and laterals in 24 separate locations, and backfilling with excavated earth, which is compacted with the excavator bucket. There are no facilitating practices. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.

Scenario Feature Measure: Acres of Tract

Scenario Unit: Acre

Scenario Typical Size: 160

Scenario Cost: $1,844.77 **Scenario Cost/Unit:** $11.53

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Equipment/Installation						
Hydraulic Excavator, .5 CY	930	Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included.	Hour	$47.65	24	$1,143.60
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$20.15	24	$483.60
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$217.57	1	$217.57

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Scenario: #2 - Palustrine Floodplain features and levee removal

Scenario Description:

A palustrine emergent wetland tract on a floodplain is to be restored by mirco and macrotopographic features and/or levee removal. It has been converted to agricultural production. Primarily, resource concerns are related to soil and water quality degradation, degraded plant condition, and inadequate fish and wildlife habitat

Before Situation:

A levee prevents floodwater from entering a 4 acre typical sized tract. The original cover was forest or prairie. The site may or may not be drained by surface ditches. The site has been cleared. The lateral connectivity between the channel and floodplain has been altered by construction of levees along the reach.

After Situation:

The hydrology of the 4 ac tract is restored using wetland embankments, ditch plugs, excavation of macrotopographic features, earthfill placement of macrotopographic features, and levee removal. Wetland embankments are typically less than 3 feet in height and have an associated water control structure. Marcotopographic excavations and earthfill features constructed on the wetland and adjacent non-wetland area typically have a maximum depth or height of 24 inches. The levee is breached at the upstream and downstream ends of the tract reach, restoring dynamic stream flooding. The breach length is 150 feet long at both locations. Both the wetland and non-wetland areas are planted with a mix of species adapted to the site. Facilitating practices include Structure for Water Control, Grade Stabilization Structure, Conservation Cover, and Tree and Shrub Planting. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.

Scenario Feature Measure: Cubic Yards of Earthwork

Scenario Unit: Cubic Yard

Scenario Typical Size: 4,700

Scenario Cost: $17,836.80 **Scenario Cost/Unit:** $3.80

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Equipment/Installation						
Excavation, common earth, wet, side cast, large equipment	1228	Bulk excavation and side casting of wet common earth with hydraulic excavator or dragline with greater than 1 CY capacity. Includes equipment and labor.	Cubic Yard	$3.58	3500	$12,530.00
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	$3.73	1200	$4,476.00
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$415.40	2	$830.80

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Scenario: #3 - Depression or Playa wetland restoration, CY units

Scenario Description:

A depressional or playa wetland is to be restored by sediment removal. The site is an enclosed depression or playa whose hydrology is supplied from either surface runoff or sub-surface flow. Restoration may or maynot involve ditch plugging. Primarily, resource concerns are related to soil and water quality degradation, degraded plant condition, and in-adequate habitat for wildlife. The restoration shall be for the purpose of maintaining the depression or playa as wetland habitat. The depression or playa shall be cultivated only under natural condtions and not annually. Livestock may graze the site according to grazing management plan.

Before Situation:

An average 10 acre wetland has been converted to agricultural production. The wetland in question receives surface runoff from its surrounding watershed. Once entering the wetland, the water flows through a drainage ditch. The wetland in question may receive water from an underlying water table. Largely, the watershed has been converted to an agricultural land-use. On average, soil erosion resulting from the land-use conversion has deposited 6 inches of sediment in the bottom of the depression or playa.

After Situation:

In the depression or playa, sediment has been removed down to the original topsoil layer. A hydro-phytic, herbaceous plant community adapted to the site has been seeded. Facilitative practices include Conservation cover and Wetland wildlife habitat management. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.

Scenario Feature Measure: Cubic Yards of Earthwork

Scenario Unit: Cubic Yard

Scenario Typical Size: 8,298

Scenario Cost: $30,987.69 **Scenario Cost/Unit:** $3.73

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Equipment/Installation						
Excavation, common earth, wet, side cast, large equipment	1228	Bulk excavation and side casting of wet common earth with hydraulic excavator or dragline with greater than 1 CY capacity. Includes equipment and labor.	Cubic Yard	$3.58	8067	$28,879.86
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	$3.73	231	$861.63
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$415.40	3	$1,246.20